

- (6) M - Define density and apply the equation
- (7) S - Describe various methods of measuring the density of substances
- (8) C - Recall and apply the rules for uncertainty

## Lesson 8. Density



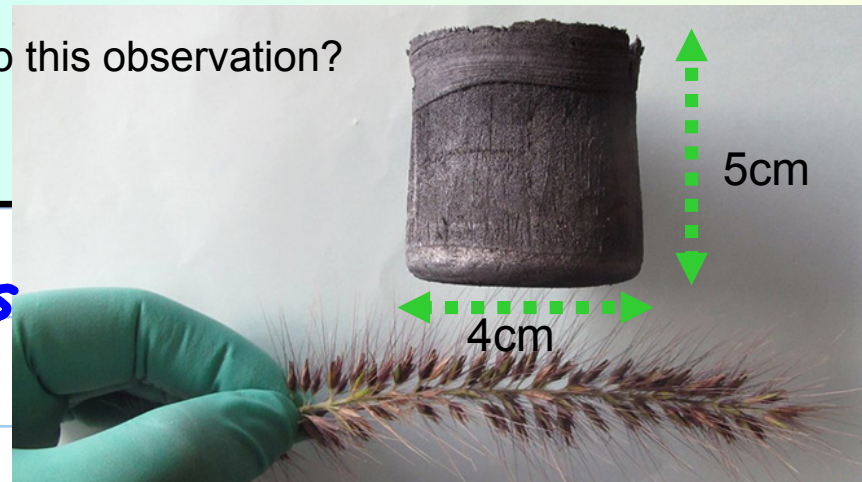
S

A

### STARTER:

What is this substance?

What property of it leads to this observation?



$$V = \pi r^2 h$$

$$= 6.2 \times 10^{-5} \text{ m}^3$$

The density of aerogel is  $1.9 \text{ kg m}^{-3}$

$$\rho = \frac{M}{V} =$$

First define density, and recall the equation with correct units.

Calculate the mass of this block in kg and grams.

$$M = \rho V = 1.2 \times 10^{-4} \text{ kg.}$$

Ex: How does it compare to the density of water?

P



Key  
point

- (6) M - Define density and apply the equation  
(7) S - Describe various methods of measuring the density of substances  
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**ACTIVITY 1:** Follow the worksheet to determine the density and find the uncertainty in your values

**HWK:**

Oxford A Level Sciences  
OCR Physics A

## 4.8 Density and pressure Method sheet

### Determining density

#### Specification references

- 1.1.2 a)
- 1.1.4 d)
- 1.2.1 d)
- 1.2.2 e)
- 3.2.3 a) c)
- 3.2.4 a)

#### Learning outcomes

After completing the practical you should be able to:

- find the volume of a rectangular shape
- follow the correct procedure for using calipers and a micrometer
- use the principle of moments to find the mass of an unknown object
- calculate the density of an object
- combine percentage uncertainties.

#### Background

In this experiment you will be measuring the density of a metre rule by using the principle of moments to measure its mass. You will also be giving particular consideration to the percentage error of the procedures that you use.